

Reg. No. : .....

Name : .....

First Semester B.Sc. Degree Examination, January 2016  
(First Degree Programme Under CBCSS)

CHEMISTRY

Core Course – I

CH 1141 : Inorganic Chemistry – I  
(2013 Admission Onwards)

Time : 3 Hours

Max. Marks : 80

SECTION – A

Answer **all** questions. Answer in **one** word to maximum of **two** sentences. **Each** question carries **one** mark.

1. What is the optimum pH and DO of drinking water as per Indian Standards ?
2. Explain the term secondary pollutants.
3. Mention the hazards of burning plastics.
4. How is a liquid made stationary in GLC ?
5. Why is oxalate called an interfering ion ?
6. When HCl gas is passed through a saturated solution of sodium chloride, a white precipitate is formed. Explain.
7. Define ionisation enthalpy.
8. What do you mean by Aufbau principle ?
9. Sketch the shape and orientation of the  $d_{xy}$  and  $d_{x^2-y^2}$  orbitals.
10. Explain why the de Broglie relation does not have any significance in everyday life ?

## SECTION – B

Answer **any eight** questions. Short answer type **not** to exceed **one** paragraph. **Each** question carries **two** marks.

11. What are the main differences between matter waves and electromagnetic waves ?
12. State and explain Heisenberg's uncertainty principle.
13. Calculate the percentage ionic character in HCl, given the electronegativities of H and Cl are 2.1 and 3.2 respectively.
14. List out the quantum numbers of all the electrons in Boron atom.
15. Describe the principle of calibration of a pipette.
16. What are the advantages of microscale analysis ?
17. How is phosphate eliminated in qualitative analysis ?
18. Explain co-precipitation with an example.
19. Show how CFC's cause ozone layer depletion.
20. How can we control  $\text{SO}_2$  emission to atmosphere ?
21. What are the main sources of thermal pollution ?
22. Briefly explain how water bodies are polluted by detergents.

## SECTION – C

Answer **any six** questions. Short essays **not** to exceed **120** words. **Each** question carries **four** marks.

23. Give the relationship between Cartesian coordinates and polar coordinates. Write down the three-dimensional Schrodinger equation in polar coordinates.
24. Compare the Pauling's, Mulliken's and Allred-Roehow's scale of electronegativities.
25. Explain how elements are classified into different blocks in the periodic table.
26. Give the principle and procedure of double burette titrations.

27. Explain why  $\text{Cu}^{2+}$  and  $\text{Ni}^{2+}$  are precipitated in different groups as their sulphides.
28. Briefly explain the different steps involved in a gravimetric determination.
29. Write a short note on post precipitation, its effects and methods to avoid it.
30. What are the symptoms of water pollution ?
31. Describe the phenomenon of global warming.

## SECTION - D

Answer **any two** questions. Long essay type. **Each** question carries **fifteen** marks.

32. Explain the source, effects, sink and control measures of the following pollutants in air (a)  $\text{CO}$  (b)  $\text{NO}_x$ .
33. Write notes on :
- Radioactive pollution
  - Eutrophication
  - Water pollution by heavy metals.
34. Write an essay on the different types of indicators used in volumetric analysis.
35. Explain the principle, procedure and applications of :
- TLC
  - Paper chromatography
  - Gas chromatography.